



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,813	07/20/2005	Karine Valle	13777-46	8622
45473 7590 09/16/2009 BRINKS, HOFER, GILSON & LIONE P.O. BOX 1340 MORRISVILLE, NC 27560				
EXAMINER				
ARCIERO, ADAM A				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
09/16/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/542,813

Applicant(s)

VALLE ET AL.

Examiner

ADAM A. ARCIERO

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-46, 57 and 58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-46, 57 and 58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 07/24/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

**CONDUCTIVE ORGANIC-INORGANIC HYBRID MATERIAL COMPRISING A
MESOPOROUS PHASE, MEMBRANE, ELECTRODE AND FUEL CELL**

Examiner: Adam Arciero Art Unit 1795 S.N. 10/542,813 September 11, 2009

Election/Restrictions

1. Applicant's election with traverse of the restriction in the reply filed on May 15, 2009 is acknowledged. The traversal is on the ground(s) that groups I, II and III are considered to have unity of invention. This is not found persuasive. The Examiner must show that all groups lack unity with one another. Group II lacks unity with Groups I and III because Group II required a fuel cell comprising at least one electrode. Group III lacks unity with Group I because Group III requires process steps for preparing the material of Group I.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 29-31, 33-43, 45-46 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over SERPICO et al. (US 2003/0118887 A1) in view of SAYARI et al. (Chemistry of Materials 2001, 13, 3151-3168, as found in IDS) and as evidenced by OHLSEN et al. (US 2002/0028372 A1).

As to Claim 29-31, 33-34 and 45, SERPICO et al. discloses an organic-inorganic hybrid material comprising two phases, a mineral phase and a material comprising a polymer integrated in said mineral phase and covalently bonded to said mineral phase (pg. 7, [0045]). SERPICO et al. does not specifically disclose wherein the mineral phase comprises walls which define pores forming a structured mesoporous network.

However, SAYARI et al. discloses an organic-inorganic hybrid material comprising a mesoporous silica mineral phase (pg. 3165, col. 2). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the mineral phase material of SERPICO et al. with a mesoporous mineral phase, because SAYARI et al. teaches that it becomes possible to synthesize highly dispersed silica-polymer nanocomposites, which exhibit improved properties such as modulus, resistance to distortion and strength (pg. 3165, col. 2).

As to Claims 35-36, SERPICO et al. discloses wherein the anion exchange groups can be basic aromatic or nonaromatic radicals containing at least one radical selected from imidazole (pg. 6, [0042]).

As to Claims 37-38, SERPICO et al. discloses wherein the mineral phase is alumina (pg. 7, [0045]).

As to Claims 39-40, SERPICO et al. discloses a co-continuous network formed of the hybrid material (pg. 7, [0045]).

As to Claims 41 and 58, the combination of SERPICO et al. and SAYARI et al. disclose a mesoporous network. However, the prior arts are silent to the pore size ranging from 1 to 100 nm. However, it is known that mesoporous networks have an average pore size of 2 nm to 50 nm, as evidenced by OHLSEN et al. (pg. 7, [0070]).

As to Claims 42-43, SERPICO et al. discloses wherein the polymer is a styrene-ethylene polymer (pg. 7, [0047]).

As to Claim 46, SERPICO et al. discloses an electrolyte membrane for a fuel cell comprising the material of claim 29, wherein said membrane is placed between two electrodes of the fuel cell, therefore said electrode comprises the material of claim 29.

5. Claims 32 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over SERPICO et al. (US 2003/0118887 A1) in view of SAYARI et al. (Chemistry of Materials 2001, 13, 3151-3168, as found in IDS) and as evidenced by OHLSEN et al. (US 2002/0028372 A1) as applied to claims 29-31, 37-43, 45-46 and 58 above, and further in view of BRINKER et al. (US 6,270,846 B1).

As to Claims 32 and 44, the combination of SERPICO et al. and SAYARI et al. as evidenced by OHLSEN et al. does not specifically disclose an optional phase composed of at least one surface active agent.

However, BRINKER et al. teaches a hybrid material comprising a surfactant such as phosphates or alkylammonium salts (col. 3, lines 30-45). At the time of the invention, it would

have been obvious to one of ordinary skill in the art to modify the material of SERPICO et al. and SAYARI et al. with a surfactant, because BRINKER et al. teaches that a thin film having a low dielectric constant can be produced (col. 3, lines 3-5).

6. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over SERPICO et al. (US 2003/0118887 A1) in view of SAYARI et al. (Chemistry of Materials 2001, 13, 3151-3168, as found in IDS) and as evidenced by OHLSEN et al. (US 2002/0028372 A1) as applied to claims 29-31, 37-43, 45-46 and 58 above, and further in view of WU (US 6,465,052).

As to Claim 57, SERPICO et al. teaches the use of alumina as an oxide. However, the combination of SERPICO et al. and SAYARI et al. does not specifically disclose wherein the oxide is selected from europium, cerium, lanthanum, gadolinium and mixed oxides thereof.

However, WU teaches a method to produce a nano-porous coating onto a solid substrate comprising the use of aluminum, europium and gadolinium (col. 1, lines 12-26 and col. 8, lines 20-51). At the time of the invention, it would have been obvious to one of ordinary skill in the art that the use of aluminum is equivalent or exchangeable with the use of europium or gadolinium in forming nanoporous coatings.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*

Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 29-46 and 57-58 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31-51, 61-62 and 66-67 of copending Application No. 10/542,768. Although the conflicting claims are not identical, they are not patentably distinct from each other because all of claims 31-51, 61-62 and 66-67 of copending application 10/542,768 teach all of the limitations of the claims of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 8am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795